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ABSTRACT

The University of Oulu (Finland) has a 10-year experience in distance education. Located in Northern Finland, Oulu is a center for small distant villages and towns in Lapland. The Department of Educational Sciences and Teacher Education at the University of Oulu is a leading institution in the field of distance learning. Students complete their practicum studies at the University Experimental School and in village schools.
ISDN-videoconferencing has solved many educational problems in the rural areas in Lapland by giving opportunities for teacher trainees to practice their teaching skills with information and communication technology (ICT), and pupils in remote schools have had the opportunity to receive instruction in every subject of the school program. The University of Oulu is one of the three universities in Finland providing music teacher education for comprehensive and secondary schools. During the practical period of the studies in the Music Teacher Department, the students taught music to the school of Utsjoki located in the very north of Finland on the Norwegian border, 800 kilometers from Oulu. The Utsjoki project is a good example of activities that have been done using videoconferencing in teaching and as a part of the practicum of teacher trainees. The main goal of the Utsjoki project, which began in 1995, is to create and develop learning methods and a network of schools in order to increase educational equality and utilize the decreasing resources of the schools. Use of ISDN technology brought a music teacher to the classrooms of the Utsjoki School and the pupils were enthusiastic with the instruction. Teaching with two-way videoconferencing does have major problems, with the limited possibilities of sound and picture, and the University of Oulu has developed this learning environment and has attempted to minimize these particular problems. Includes 15 links to Web sites. (AEF)

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Is It Possible To Teach Music In a Classroom From Distance of 1000 km? Learning Environment of Music Education Using ISDN-Videoconferencing

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Abstract: ISDN-technology has solved many educational problems in rural areas in Lapland, Northern Finland. This paper presents the results of research conducted in Utsjoki School about music education in classrooms. The instruction has been given using ISDN-videoconferencing from a distance of 1000 km. Also the model for teaching music in VC-environment is presented.

1. ICT in Teacher Training

The University of Oulu (Finland) has a ten-year-experience in distance learning. Located in Northern Finland, Oulu, is a center for small distant villages and towns in Lapland. Distance learning has become an everyday way of instruction and communication. The Department of Educational Sciences and Teacher Education of the University of Oulu is a leading educational institution in the field of DL. The use if ICT in DL (and generally in teaching) is a part of the compulsory studies for students. Students are also able to take optional courses of ICT.

Students complete their practicum studies at the University Experimental School and in village schools. Many schools in scattered areas do not have teachers with different focus areas of instruction. ISDN-videoconferencing has given opportunities for teacher trainees to practice their teaching skills with ICT and pupils in remote schools have had the opportunity to receive instruction in every subject of the school program.

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2. The University of Oulu/Music Education

The Department of Educational Sciences and Teacher Education of the University of Oulu has Kindergarten, Elementary Teacher, Music Teacher and Subject Teacher departments. The University of Oulu is one of the three universities in Finland providing subject teacher education in music teachers for comprehensive and secondary schools. The goal of the music education program is to provide the student with skills, information and attitudes required in widely and autonomously taking care of tasks in music education as well as developing the work and scientific aspects. The student is familiarized with the goals, contents and protocols of music education as well as with the application and observation of pedagogic music research. [musicedu.oulu.fi].

Essential points of emphasis in studies are amongst others music and communication technology. All students take part in learning of distance education –methods, lesson planning, using videoconferencing and creating www-material for music lessons.

The Music Department has taken a leading role in developing and integrating the music education in Northern Finland. Cooperation has been done between schools, institutes of music and the Department. Some projects have been done by the members of the staff but mostly in cooperation with the students. Thus all the partners - professors, students, distance teachers and students in institutes and schools - have had important and unique experiences in music education by distance.

During the practical period of the studies at the Music Teacher Department the students taught music to the school of Utsjoki located 800 km from Oulu. The attempt to create a learning environment similar to a normal classroom with face-to-face teaching.

3. Models For Teaching In ISDN-Videoconference Environment

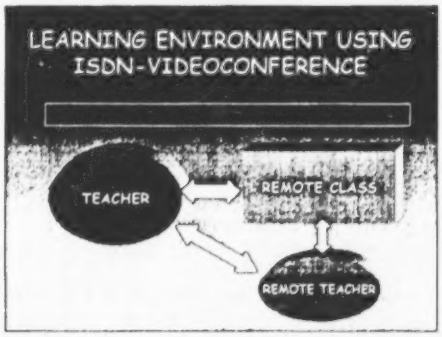

Figure 1: A teacher with a remote class.

In the first model a local teacher is alone conducting the lesson with the remote class. There might also be a teacher, but in many cases in scarced villages there are no special teachers for all the subjects of the school curriculum. Even the pupils take care of the of the facilities and the classroom discipline. More often there is however a teacher as a technical tutor, but he may not have any knowledge of the teaching subject. The local teacher has the main responsibility of teaching.

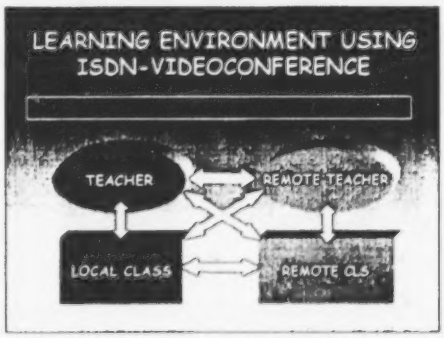

Figure 2: Two classrooms simultaneously.

In the second model a teacher is conducting the lesson with the local class and the remote class together. There may also be a remote teacher or a tutor. If the remote teacher is familiar with the teaching subject, the responsibility of teaching can be divided between the two teachers. The interaction and communication goes on between all the partners. [musicedu.oulu.fi/koti/jmaki.htm].

4. Utsjoki-Project

Utsjoki is a good example of activities that has been done using videoconference in teaching and as part of the practicum of teacher trainees.

Utsjoki is a village with 1500 inhabitants and it is situated in the very North of Finland on the Norwegian border [www.utsjoki.fi]. The municipality has three villages which are located tens of kilometers from each other. Each of them has a school of own but only with few pupils. Without VC-technology

the pupils could not receive all the lessons of the comprehensive school program. The main school in Utsjoki has also upper secondary school. Many students of Lower and Upper Secondary School of Utsjoki are brought with taxi from a distance of 50 kilometers or more and some pupils remain every school week in Utsjoki returning home only for the weekends.

4.1. Background to the Project

In the early 90's there were first experiments of distance learning using Tele-X-satellite and later ISDN-lines. There also existed need for distance medical services and so there was interest in different level of municipality. Other villages in Lapland, technological institutions, universities, state and province became partners in the project, too. Because of the long distances from cultural centers and scarce teacher resources, videoconferencing has given new aspects for education.

The Utsjoki-project started in 1995 as preliminary preparation. Experimenting, research and establishing period was implemented in 1996-1999. It had financial support from the Finnish state, European Social Fund and European regional development Fund-project. Because of the excellent results, the Project-application with videoconference was continued until July 2000. [www.utsjoki.fi/~utspoli].

Most of the activities have taken place in the lower and upper secondary school. The main goal of the Utsjoki-project is to create and develop learning methods and networks that increase educational equality and utilize the decreasing resources of the schools. The networking of schools both inside the Utsjoki municipality and with other municipalities in the Lapland region makes it possible to combine the scarce resources of education providing the schools with further possibilities to exist.

4.2. Teaching music from distance

The Utsjoki School had a music teacher last time 15 years ago and so the pupils had no possibility to have music lessons. The use of ISDN brought a music teacher in the classroom and the pupils were enthusiastic with the instruction. The lessons were instructed from the University of Oulu, the University of Helsinki [www.helsinki.fi], Music University Sibelius Academy in Helsinki [www.siba.fi] and the Institute of Orivesi [www.kvs.fi]. The learning environment was developed to create a similar as a normal classroom face-to-face teaching.

The lessons consisted of teaching

- history of music
- theory of music
- singing
- rhythm instruments
- rock band instruments
- ensemble playing
- pupil presentations

The experiences were very positive. The Utsjoki School last had a music teacher 15 years ago and the pupils had not been exposed to music lessons. Use of ISDN brought a music teacher into the classroom and the pupils were satisfied with instruction. Teaching with two-way videoconferencing has major problems with the limited possibilities of sound and picture as they are of vital importance in teaching music. The University of Oulu has developed this learning environment and tried to minimize these particular problems.

Teaching with tv ⊢-way videoconferencing has major problems with the limited possibilities of sound and picture which are more emphatically in teaching music. The main role is the quality of sound and picture. Using one ISDN-line (128 kpbs) a delay of 0.5 seconds occurs. It doesn't sound very much and in normal communication (speaking) it doesn't bother us at all. But that delay is very big when making music with remote class – it's even impossible to sing and play simultaneously. When there are in use two ISDN-lines (256 kpbs) or three (384 kpbs) and the lip synchronization is adjusted, the delay is so minimized that human mind doesn't even notice it.

There are no differences when teaching theory or history of music from a distance or face-to-face. The teacher is able to use all the written and acoustic material plus the internet and application sharing. Also pupils are able to work in groups, present their exercises and teamwork with the same way as in normal classroom situations. Distance lessons give more possibilities for collaborative and self-directed learning and pupils come more responsible for their own learning, because they must be active participants in the learning process.

Learning to play instruments and ensemble playing meet some problems in teaching. When a pupil is learning guitar, the teacher cannot go next to him and show where to put his fingers. He must explain verbally but he can zoom his camera close to his own hands. This is even better than a classroom situation where a pupil tries to see from the distance of several meters the finger placement. So there comes a question: is distance teaching actually "close-teaching"?

The teacher can always show the rhythms with his own guitar. The same happens with teaching the drums: he shows how to play and pupil imitates. In face-to-face situation the teacher is able to take the hands of a pupil and play together with him. This cannot happen in distance lesson. But again one advantage: quite seldom there are two drum-sets in one classroom – during distance lesson the teacher can play together with pupil and the teaching is more practical.

Because music lesson has always quite high amount of decibels, the teacher and the learning group must agree some practical rules: when and how to start and finish, in which way the teacher interrupts the playing etc. Because the sound is delivered with microphone, the distant teacher might not hear all the details. That's why it's good to use more than one microphone and place and direct them in a proper way.

The modern videoconferencing technology also gives the teacher also the possibility to zoom the remote camera. So he is able to follow closely the performance. Furthermore he is able to play MIDI-instruments together with the remote group. If the teacher also has a classroom with him, they become really versatile jam-sessions between the local and remote pupils. The distance has no borders: one group in Finland and the other group in Australia – making music together!

The critical point in teaching music with ISDN-videoconference is the excellence of planning of the lesson. The teacher must prepare everything very well: the lesson plan, all the music to be listened, to written examples of partitures, transparencies, instruments, VC-equipment – everything must be physically close to him. And he must always be flexible to change his good lesson plan in case of technical problems. A remote music teacher must be a "super-teacher". A good music teacher also uses other means like the internet and email which supplements real-time teaching. Often fax, post and even telephones are useful and necessary ways of communication.

The evaluation of the learning is sometimes quite complicated in music lessons. The teacher doesn't always see or hear all the pupils and that's why the participation during lessons is not always well recognized e.g. when they're singing together there might be problems to separate the voices. If there is a tutor or remote teacher, the evaluation is possible to do together. Often the atmosphere during the lessons is not conveyed via ISDN. After every lesson it's good to have a feedback discussion between teachers and also pupils can tell their thoughts. In the case of the Utsjoki-project it was even more essential, because part of the lessons were instructed by the

remote tutor (teacher of physics). Those lessons were however planned by the music teacher and the pupils in turn reported about the lessons to him.

Links in www

[edtech.oulu.fi] Research Unit for Educational Technology. Department of Educational Sciences and Teacher Training. University of Oulu, Finland.
[musicedu.oulu.fi] Music Education. Department of Educational Sciences and Teacher Training. University of Oulu, Finland.
[musicedu.oulu.fi/koti/jmaki.htm] Home page of senior researcher Jukka Mäki. Music Education. Department of Educational Sciences and Teacher Training. University of Oulu, Finland.
[norssi.oulu.fi] Teacher Training School. Department of Educational Sciences and Teacher Training. University of Oulu, Finland.
[www.chydenius.fi] Research and Education Institute of Chydenius, University of Jyväskylä, Finland.
[www.helsinki.fi] University of Helsinki, Finland.
[www.kvs.fi/kvs/orivesi.html] Institute of Orivesi, Finland.
[www.minedu.fi] Ministry of Education, Finland.
[www.oph.fi] National Board of Education, Finland.
[www.ouka.fi] City of Oulu, Finland.
[www.oulu.fi] University of Oulu, Finland.
[www.siba.fi] Sibelius Academy. Helsinki, Finland.
[www.ziridis.gr] The Ziridis Schools. Athens, Greece.
[www.utsjoki.fi] Municipality of Utsjoki, Finland.
[www.utsjoki.fi/~utspoli] Telematic distance learning -project in Utsjoki, Finland.

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